Ecosystem Benefits & Services

Project At a Glance

Title: Sustaining Coastal Landscapes & Community Benefits: An Interdisciplinary Model to Enhance the Impact of NERRS Science

Place: Wells, Maine

Reserve: Wells NERR

Intended Users:
- Local municipalities
- Maine Coastal Program
- Maine Sea Grant
- Maine Drinking Water Program
- Maine Department of Inland Fisheries and Wildlife
- Maine Department of Environmental Protection
- Maine Department of Marine Resources
- Southern Maine Regional Planning Commission
- Mt. Agamenticus to the Sea

Project Team Partners:
Wells NERR; George Perkins Marsh Institute, Clark University; NOAA Coastal Services Center

Timeline: 10/2010 to 10/2013

For more information:
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Balanced Decisions

Everyone values riparian buffers, though for different reasons. Developers appreciate the higher prices they fetch for houses along rivers and coasts. Property owners love a home with a view and water access—even if it means higher taxes, which, of course, makes local tax assessors happy. Ecologists and resource managers value buffers for their ability to perform a range of services, from filtering pollutants from stormwater runoff and mitigating flooding to providing habitat and promoting biodiversity.

Along the coast of southern Maine, these narrow ribbons of land have become a focal point for the tensions between development and conservation. In a rapidly developing landscape, decision makers often feel they must choose development to support local economies. While there is science to support the value of protected buffer lands, this value is not expressed in terms of quantifiable human benefits, nor is it used to characterize the tradeoffs in ecosystem services that are inherent in decisions to develop or conserve ecologically sensitive lands.

A team led by the Wells National Estuarine Research Reserve (NERR) is working with local, state, and federal stakeholders to bridge this gap by using the principles of Ecosystem Based Management (EBM) to apply social science techniques to characterize and quantify the tradeoffs in ecosystem services and benefits of land use decisions in riparian buffers and wetlands in southern Maine.

Local Context

The view from the Wells Reserve's Laudholm Farm campus looks over an area in transition. Past the thousands of acres of open fields, forests, salt marshes, freshwater wetlands

protected by the Reserve and its partners, one can see the urban sprawl that has been slowly hardening the landscape of this coastal resort area. The fields and farms that have made southern Maine such a popular place to live and visit have not disappeared, but the pressure is clearly on.

In the 25 years since it was created, the Reserve has become a trusted resource for local communities facing this transition. Its staff and more than 300 volunteers provide educational, cultural, and recreational opportunities for the general public, training for local decision makers, and ecological science to support land stewardship. As Reserve stakeholders look to the future, one need consistently rises to the top—place-based, economic information about ecosystem services and tradeoffs that clarify the true consequences of land use decisions, restoration, and conservation.

Meeting that need is not a job just for a biologist or an economist or a sociologist. It requires a range of experts and stakeholders to work collaboratively to forge a link between science and what people value about natural lands.

In the watersheds surrounding the Wells NERR (above), ongoing land use change challenges the ability of riparian ecosystems to provide benefits and services related to shoreline resiliency, water quality protection, recreation, and wildlife.

Project Goal

The project team aims to develop and apply an integrated, spatially-explicit, interdisciplinary framework to describe and measure the impacts of riparian management decisions on priority ecosystem services identified as important by Wells NERR stakeholders, including land use decision makers, planners, and policymakers.

Ultimately, they hope to model a process for linking Reserve science from programs like SWMP (System Wide Monitoring Program) to what people value in natural resources, and in so doing, create a bridge between this science and the ongoing dialogue over land use policy and decision making.

Approach

In the next three years, the project team will:

- Characterize and quantify the natural resource and ecosystem service values and priorities for local riparian systems, using recent advances in ecosystem service valuation and data available from the Wells NERR.
- Evaluate Wells NERR and stakeholders' approaches to communicating science as a means to assess how well these methods align with the values and priorities identified and use this evaluation to produce high impact, science-based communication strategies.
- Use the Collaborative Learning process to build a community of practice between the Wells NERR Coastal Training Program and stakeholders who are united by common interests in the impacts of riparian land use so they can share best practices and benefit by efficient exchange of information.
- Provide environmental economists, interdisciplinary teams, and social scientists interested in improving the impact of NERRS programs and science with templates and tools to predict and communicate the provision and value of ecosystem services and to use associated information to inform policy.

SUPPORT FOR THIS PROJECT

This project is being funded by the NERRS Science Collaborative.

The Science Collaborative uses a competitive process to identify and fund science to address environmental challenges in communities served by Reserves. Projects are selected through annual competitions, designed to insure that investigators, intended users of the science, and relevant stakeholders work together to describe science needs to address specific problems, define research questions, design and implement projects, and apply the results.

The program works with coastal outreach specialists, trainers, and communicators to share information about the science that it funds with other Reserves and the broader coastal management community.

The Science Collaborative also sponsors Training for the Integration of Decision-Making and Ecosystem Science (TIDES), a UNH-based program that helps develop the skills needed to link science-based information to coastal resource management decisions. TIDES offers a non-thesis master's degree track and is developing a professional certification program.

The NERRS Science Collaborative is administered by the University of New Hampshire (UNH) through a cooperative agreement with the National Oceanic and Atmospheric Administration (NOAA).

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